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ERTS PROGRESS REPORT COVERING THE  
PERIOD 1 JUNE 1973 TO 31 JULY 1973

PLANNING APPLICATIONS IN EAST CENTRAL FLORIDA

PROPOSAL NO. Y-10-066-001

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BREVARD COUNTY PLANNING DEPARTMENT

TITUSVILLE, FLORIDA

ERTS PROGRESS REPORT COVERING THE PERIOD 1 JUNE 1973 TO 31 JULY 1973

PLANNING APPLICATIONS IN EAST CENTRAL FLORIDA

PROPOSAL NO. Y-10-066-001

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## COMPUTER PROGRAMS

The histogram mentioned earlier is in use but undergoing further modifications.

A program to determine and map ratios for any two chosen bands is being prepared. It is being used but is subject to further development.

## CHARACTERISTICS OF CITIES

### Titusville

#### Quantitative:

The use of density-sliced maps in combination with printout of radiance values and with histograms (which tally the numbers of resolution elements in the various intensity categories) enables some quantitative evaluations. Further, the use of a computer printer for mapping gives the information in terms of individual resolution elements, thereby using the complete resolution capability of the sensor system.

For example, it is possible to give quantitative descriptions of spectral reflection characteristics (signatures) of various land-use classes. A start has been made in this direction for points chosen at random within identified sectors of Titusville. The values are given in Figure 1. As other cities in the same frame are studied, more data can be added to this chart. Such figures can be expected

FREQUENCY OF OCCURRENCE

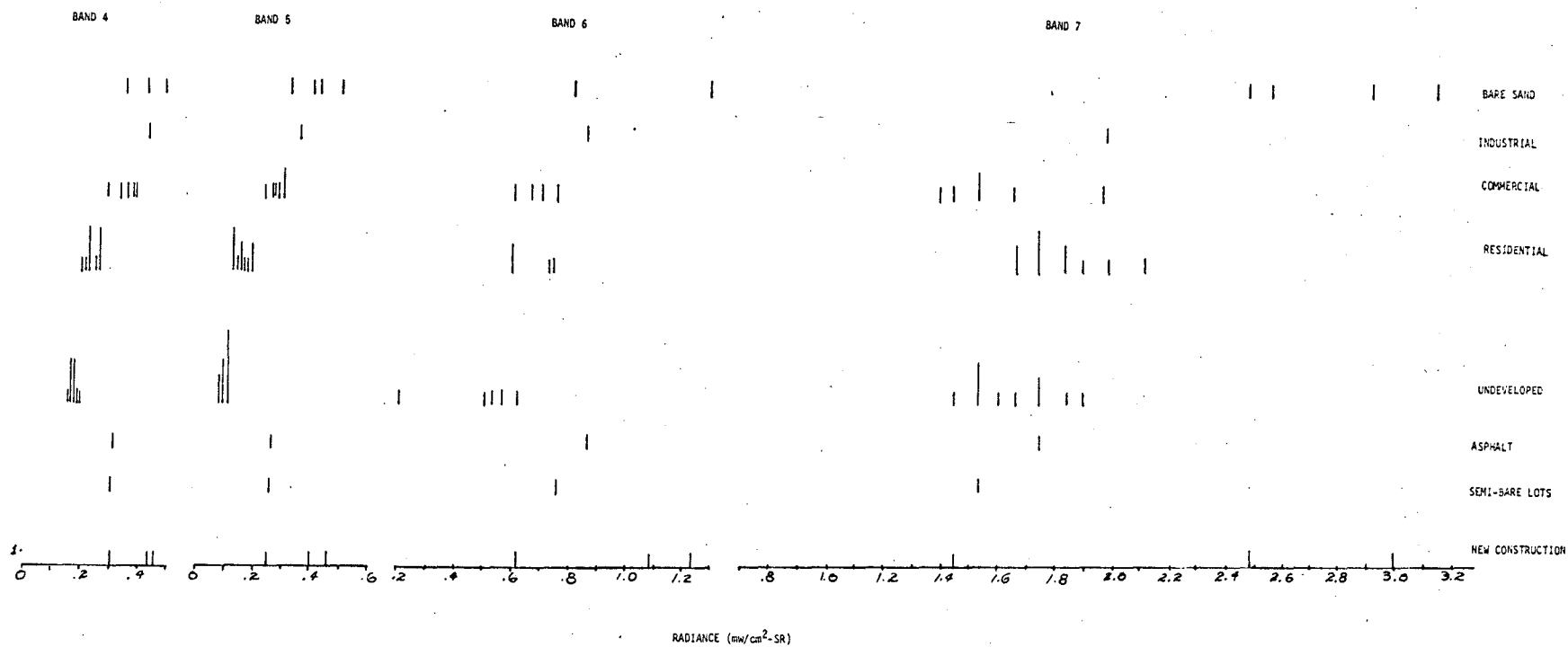


FIGURE 1

to vary with atmospheric conditions and with the angle of incidence of the sunlight.

#### RATIO MAPPING

The computer program which gives a mapping of characters representing ranges of the ratio of intensities is beginning to be used. Early results indicate that this method will be useful for analysis of urban areas. For example, a mapping of the ratio of bands 7/5 gives the best delineation of major commercial areas yet obtained for Titusville, as illustrated by Figure 2.

#### LAND USE MAPS

It has been found that a band 5 density map of the type shown in Figure 3 gives a good representation of the pattern of the developed portion of a city. This can be seen by comparing Figure 3 with the conventional land use map of the city as used by the city planners (Figure 4). The close similarity is further seen when Figure 4 is projected onto Figure 3 by a zoom transfer scope and traced; the result is shown as Figure 5.

As expected, computer density maps of the four bands show different patterns. A map for band 7 is shown as Figure 6. Bands 5 and 7 have been most used by us, with bands 4 and 6 providing minor amounts of additional information. Our choice of primary bands is based, at least in part, on the fact that bands 4 and 6 in this frame contain some bad scan lines which affect the appearance of the images and computer

STRIP COMMERCIAL

CENTRAL  
BUSINESS  
DISTRICT

STRIP  
COMMERCIAL

COMMERCIAL  
AREA

SHOPPING  
CENTER

SHOPPING  
CENTER

APARTMENT  
HOUSE

SHOPPING  
CENTER

FIGURE 2

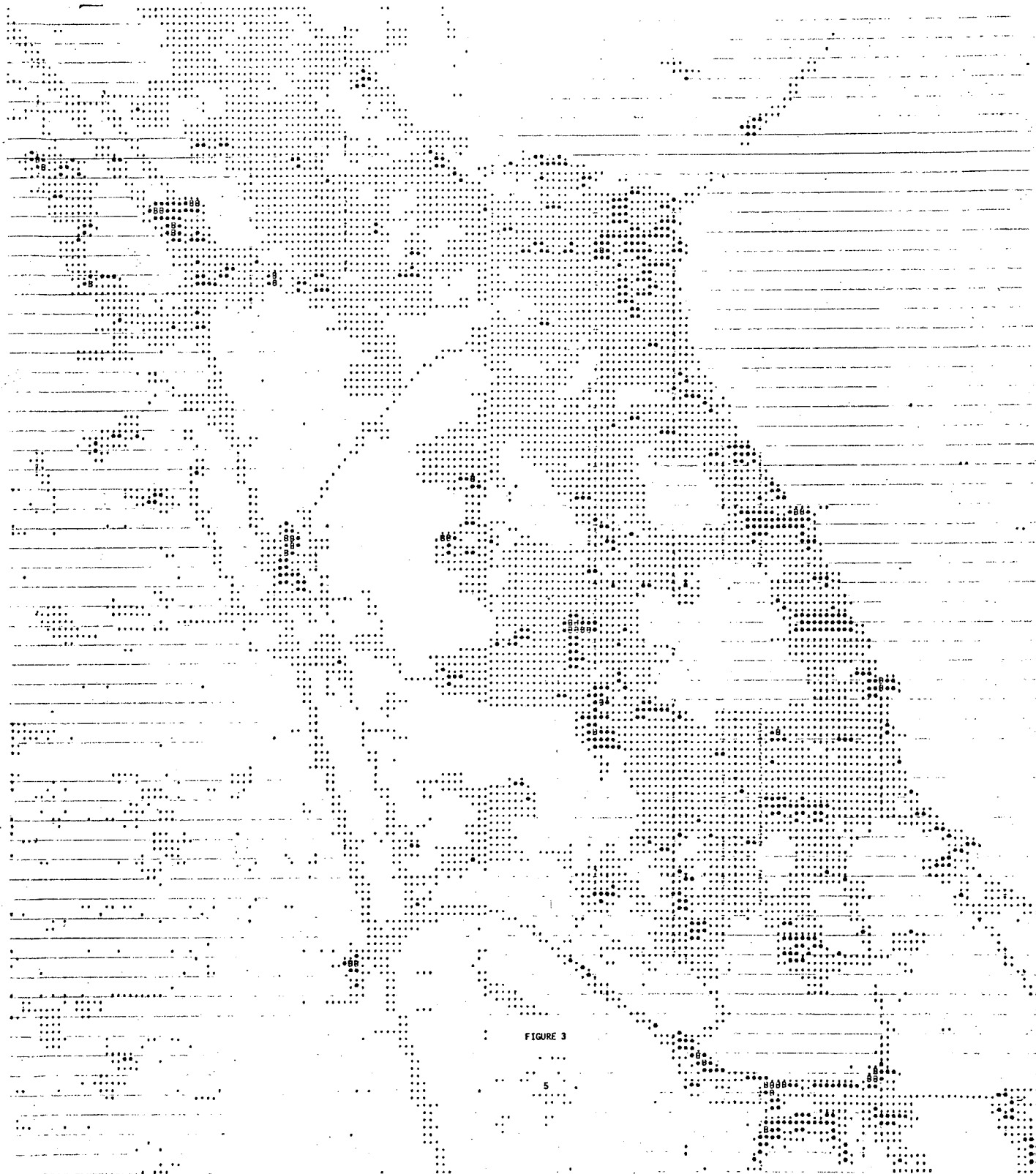


FIGURE 3

5

# GENERALIZED LAND USE - 1971



TITUSVILLE PLANNING DEPARTMENT

## LEGEND







-  RESIDENTIAL
-  PUBLIC & INST.
-  COMMERCIAL
-  INDUSTRIAL
-  AGRICULTURE
-  VACANT

FIGURE 4



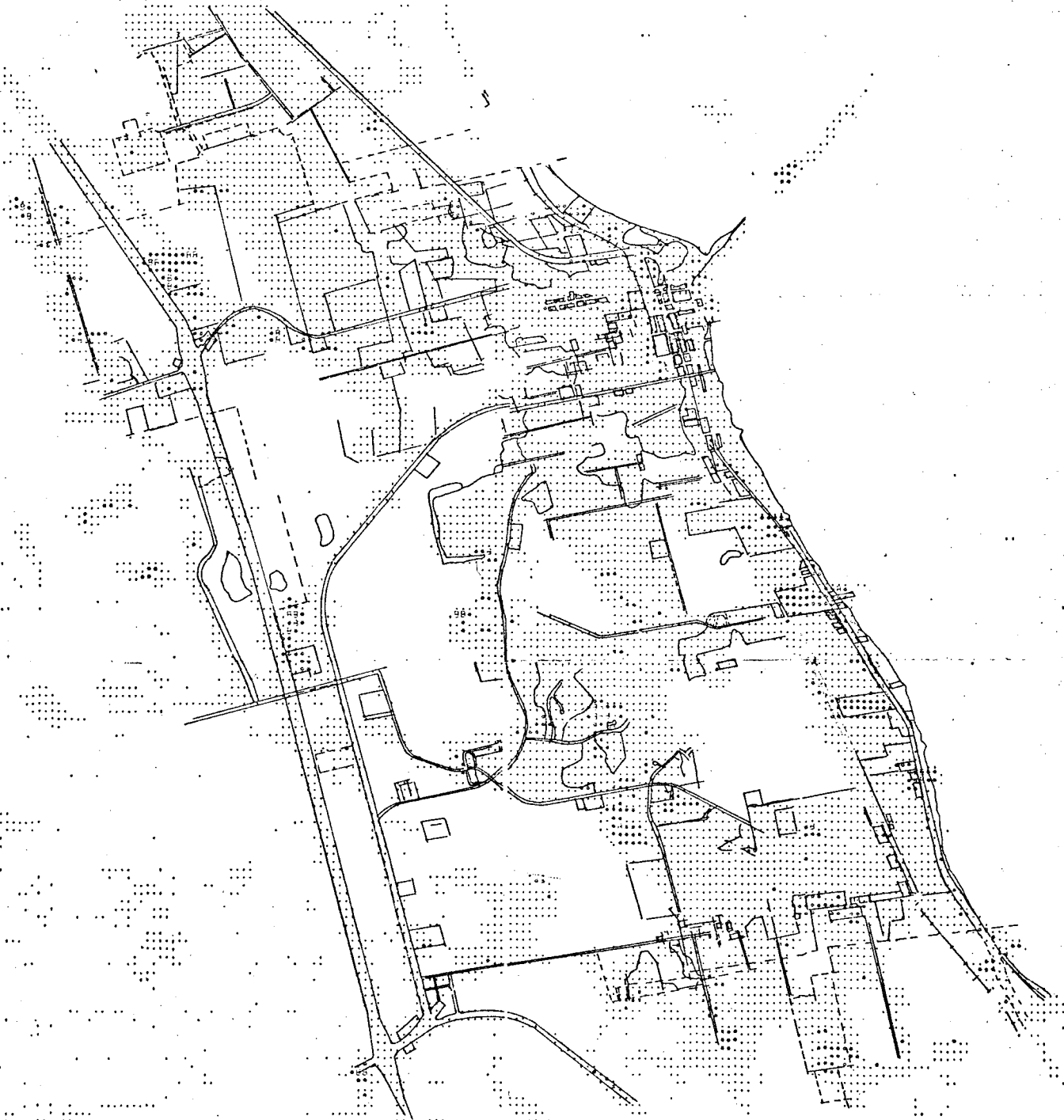


FIGURE 5

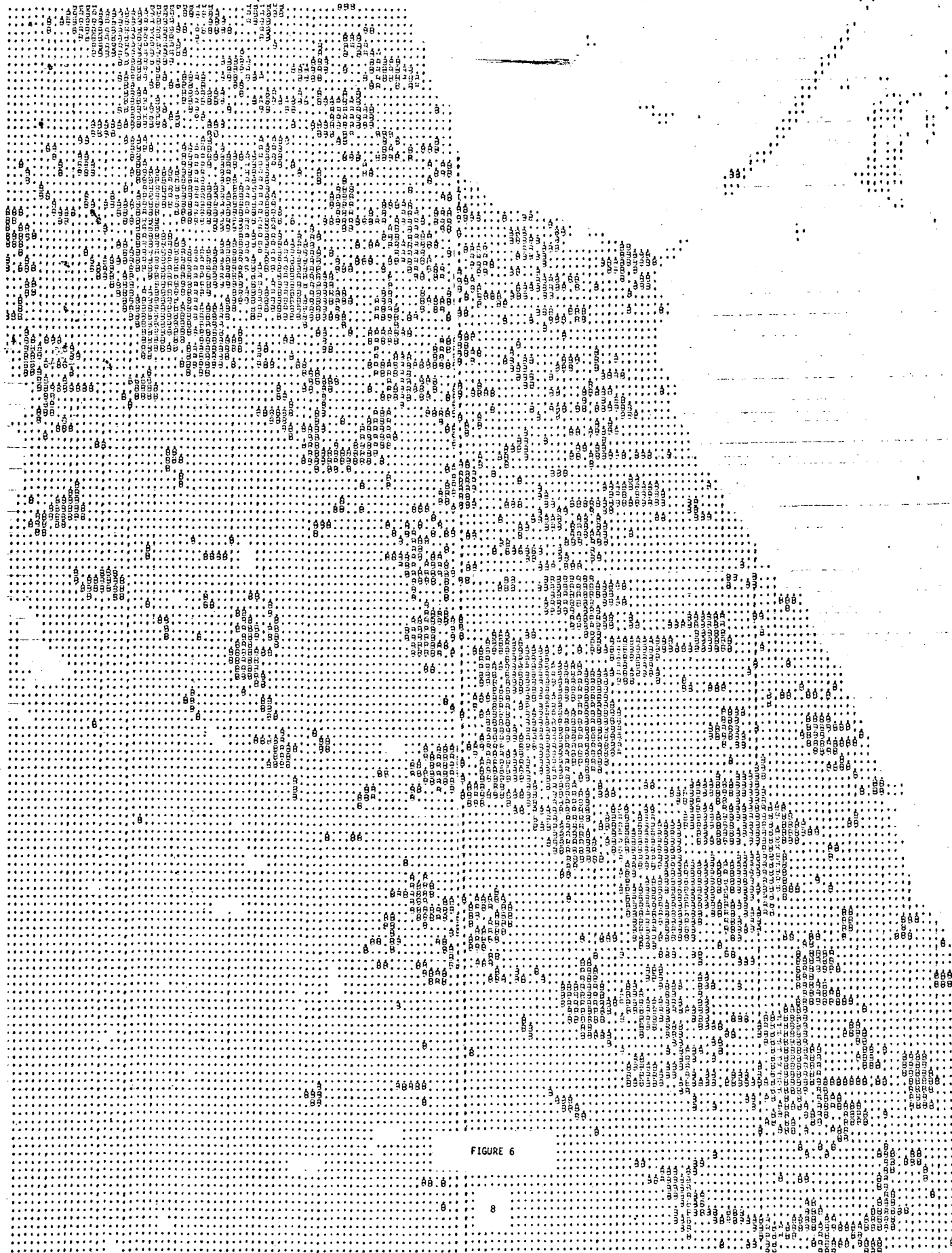


FIGURE 6

maps but do not prevent the determination of patterns.

A procedure which has been found useful is the placing of a single mylar sheet over each of the five maps (for the four bands and the ratio 7/5) in turn so that when the evident features of each of the five maps are traced on the transparency, a composite pattern is obtained, as shown by Figure 7. The number designations for land use classifications shown on that figure are those recommended by the Inter-Agency Steering Committee.<sup>1</sup>

The classifications used on this map are listed in Table 1 for convenience of reference.

The land use map of Figure 3 has been discussed with the city planners of Titusville and a similar one for Cocoa has been discussed with the Cocoa city planner. The planners of both cities state that cities with planning staffs normally have existing land use maps which give greater detail than this type of computer map. The Titusville planners, however, find that the map will be useful to them in planning utilities extensions to regions outside the city limits, for their existing land use maps cover only the region within the city limits. Use of this map will reduce the amount of conventional field survey required.

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<sup>1</sup>J. R. Anderson, E. E. Hardy, and J. F. Roach:  
A Land-Use Classification System for Use with Remote-sensor  
Data, Geological Survey Circular 671 (1972)

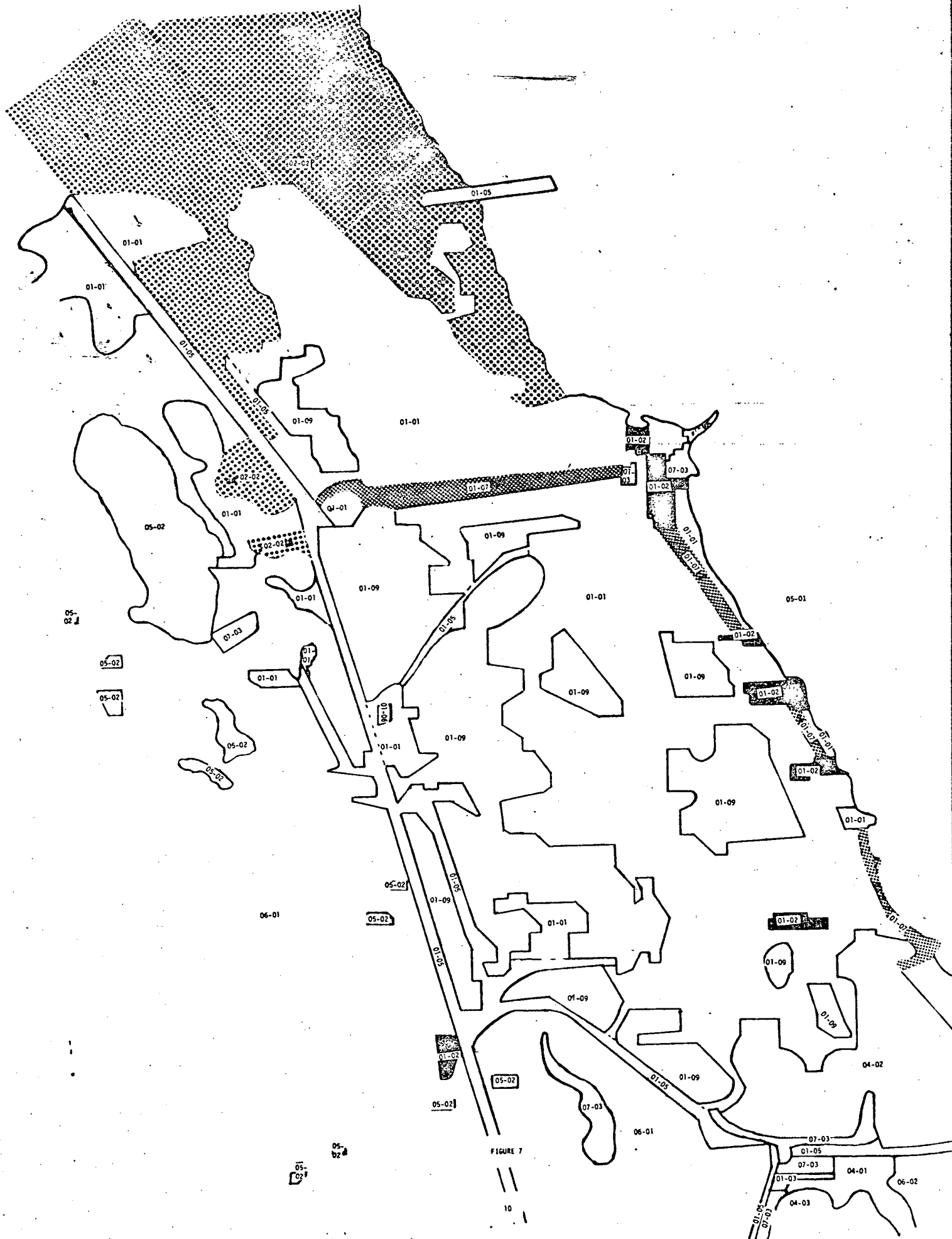


TABLE 1

LAND-USE CATEGORIES:

<u>1st Pair of Digits</u>	<u>2nd Pair of Digits</u>
01. Urban and Built-up Land	01. Residential 02. Commercial and services 03. Industrial 05. Transportation 07. Strip 09. Open
02. Agricultural Land	02. Groves
04. Forest Land	01. Deciduous 02. Evergreen
05. Water	01. Streams and waterways 02. Lakes
06. Nonforested Wetland	01. Vegetated 02. Bare
07. Barren Land	03. Sand other than beaches

It has been suggested that a map of this type should be of use to planners doing conceptual planning, that is, planning in the early stages of the development of a land use plan.

The more detailed land use plan of Figure 7 has not yet been discussed with the city planners.

#### ACKNOWLEDGMENTS

Useful discussions have been held with Thomas C. McCollum and James L. Quinn, Titusville City Planners; Gerald S. Langston, Jr., Cocoa City Planner; and H. James Ford, Brevard County Planning and Zoning Director. Further thanks are due to Mr. Quinn for making an estimate of the economic advantage of using the band 5 computer map for conceptual planning for the outlying sectors of Titusville.